

Connecticut



Strategic Highway Safety Plan

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State of Connecticut

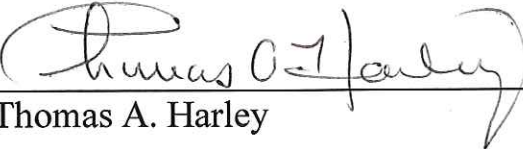
WHEREAS, the Connecticut Strategic Highway Safety Plan Steering Committee has numerous stakeholders from various agencies throughout the Local, State and Federal Governments; and

WHEREAS, the Connecticut Strategic Highway Safety Plan is a far-reaching document incorporating numerous unique emphasis areas; and

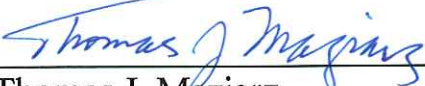
WHEREAS, the Connecticut Strategic Highway Safety Plan's emphasis areas are championed by subject experts within their respective State agencies; and

WHEREAS, the Connecticut Strategic Highway Safety Plan is a living document that will evolve as time moves on; now


THEREFORE, on behalf of Dannel P. Malloy, Governor of Connecticut, in recognition of the Connecticut Strategic Highway Safety Plan's mission, vision and goals, we acknowledge and support this Plan.


Thomas A. Harley
Chief Engineer
Connecticut Department of Transportation

Date: May 8, 2013


Thomas J. Maziarz
Governor's Highway Safety Representative
Connecticut Department of Transportation

Date: 5-20-2013


James P. Redeker
Commissioner of Transportation

Date: 5/16/13

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Connecticut Strategic Highway Safety Plan

MISSION:

To provide a safe, efficient and cost effective transportation system that meets the mobility needs and safety of its users.

VISION:

All users of the transportation system arrive safely at their destinations.

GOAL:

To see a continual decline of combined serious injury crashes and fatalities.

Purpose of a Strategic Highway Safety Plan

A Strategic Highway Safety Plan (SHSP) provides the comprehensive framework which coordinates statewide safety initiatives and provides specific goals and objectives to reduce highway fatalities and serious injuries on all public roads. This statewide document acts as the blueprint for bringing together the individual safety agendas of the: **Highway Safety Improvement Program** (HSIP), which includes Suggested List of Surveillance Study Sites (SLOSSS), the Railway Highway Grade Crossing Program (RHGXP) and the High-Risk Rural Roads Program (HRRRP); the **Highway Safety Plan** (HSP), which covers behavioral, educational and enforcement safety areas; the **Commercial Vehicle Safety Plan** (CVSP), which covers the safety objectives for commercial vehicles. As such, a collaborative effort by the Connecticut Department of Transportation (CTDOT) which includes input from other public agencies and private stakeholders is essential for a successful SHSP. Additionally, the SHSP must be integrated into the State's Long-Range Transportation Plan and the Statewide and Metropolitan Transportation Improvement Program. The SHSP provides the mechanism for all highway safety programs in the State to work together in a coordinated effort to maximize resources and positions the State and all its safety partners to address the State's traffic safety challenges.

The purpose of a SHSP is to clearly identify the State's critical safety needs and direct allocated resources to achieve significant reductions in fatalities and serious injuries on highways and all other public roads. The SHSP is a data-driven, multiyear comprehensive safety plan which integrates the 4E's – engineering, education, enforcement, and emergency medical services (EMS). In order to manage this complex system and to achieve the level of integration necessary to meet the highest levels of safety, two key components are needed. The first is an organizational structure that will allow for the integration of the agencies involved in transportation safety. The second is a formal management process that will direct the activities of these agencies in a manner that will efficiently achieve the mission, vision, and goal of this Plan.

Introduction

The 2005 Federal Transportation Act - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requires timely, accurate, complete data systems so that highway safety programs can be data driven. Grants to eligible states are being provided to support the development and implementation of effective programs to:

1. Improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of safety data that is needed to identify priorities for national, State, and local highway and traffic safety programs;
2. Evaluate the effectiveness of efforts to make such improvements;
3. Link the State data systems, including traffic records, with other data systems within the State, such as systems that contain medical, roadway, and economic data; and
4. Improve the compatibility and interoperability of the data systems of the State with national data systems and data systems of other states and enhance the ability of the U.S. Department of Transportation to observe and analyze national trends in crash occurrences, rates, outcomes, and circumstances.

Highways are critically important to the movement of people, goods and services. A safe and efficient roadway network promotes economic viability and quality of life. Safety on our roads is dependent upon two components: the infrastructure of the network and the actions of the vehicle operators on the roadways. Therefore, it is necessary to have both an engineering and behavioral approach to safety. The State of Connecticut strives to ensure roadway systems are as safe as possible through a collaborative effort of many stakeholders to address the 4E's – **E**ducation, **E**ngineering, **E**nforcement, and **E**mergency Medical Services (EMS).

The Connecticut Strategic Highway Safety Plan is overseen by the Department of Transportation's Division of Traffic Engineering. The Plan was developed by a SHSP Steering Committee made up of Federal, State, Local and private sector safety stakeholders with commitment to highway safety (Appendix B). Proposed updates to the plan are developed by a smaller representative working group made up of representatives from the 2006 SHSP Emphasis Area Champions, FHWA, NHTSA, CTDOT, CTDMV and UCONN – LTAP. Updates are then presented to stakeholders prior to adoption.

All parts as described within this Plan are necessary, but there is flexibility to customize the structure and process according to external and internal factors. It is anticipated that the SHSP will be updated periodically.

Background

This planning document provides historic, trend, and current Fatality Analysis Reporting System (FARS) data in addition to the Collision Analysis System (CAS) data detailing highway safety records in Connecticut. The identified problem areas dictate the State's highway safety goals, objectives, and planned countermeasures. The basis for this examination is Connecticut's most currently available motor vehicle crash experience compared to historical data.

Overall, the number of police reported crashes in the State decreased by 2.0 percent from the year 2009. Decreases were observed in property damage only crashes (-2.4 percent) and injury crashes (-1.4 percent).

In 2010, there were 299 fatal crashes in which 319 persons were killed. The fatality total was 42.0 percent higher than the historic low number of fatalities in the previous year, but only 5.6 percent higher than the number of fatalities in 2008. Serious "A" injuries decreased by 2.9 percent in 2010, while "B" level injuries increased by 4.8 percent, and "C" level injuries decreased by 5.0 percent. In 2010, Connecticut's fatality rate was 1.02 fatalities per 100 million miles of travel compared with the national figure of 1.11 fatalities per 100 million miles of travel.

Over the 5-year period of 2006 to 2010, the number of fatalities in Connecticut has increased by 2.6 percent, compared to a decrease of 13 percent in NHTSA's New England Region, and a 23 percent decrease for the entire nation.

Over the 1994 to 2010 period, Connecticut's fatality and injury rates per 100 million vehicle miles declined. During the 1990s and into the 2000s, the fatality rate declined gradually and reached 0.88 per 100 million miles in 2005, increased slightly in 2006 and reached a historic low of 0.71 per 100 million miles in 2009.

*FARS Data

Year	Fatalities	Resident Population (Thousands)	Fatality Rate per 100,000 Population	Licensed Drivers (Thousands)	Fatality Rate per 100,000 Licensed Drivers	Registered Motor Vehicles (Thousands)	Fatality Rate per 100,000 Registered Vehicles	Vehicle Miles Traveled (Billions)	Fatality Rate per 100 Million VMT
1994	310	3,268	9.48	2,319	13.37	2,648	11.71	27	1.14
1995	317	3,265	9.71	2,349	13.49	2,671	11.87	28	1.13
1996	310	3,267	9.49	2,344	13.23	2,657	11.67	28	1.1
1997	339	3,269	10.37	2,270	14.93	2,708	12.52	29	1.19
1998	329	3,273	10.05	2,349	14	2,751	11.96	29	1.12
1999	301	3,282	9.17	2,374	12.68	2,820	10.67	30	1.01
2000	341	3,412	9.99	2,653	12.86	2,907	11.73	31	1.11
2001	318	3,435	9.26	2,650	12	2,969	10.71	31	1.03
2002	325	3,459	9.4	2,672	12.16	2,977	10.92	31	1.04
2003	298	3,483	8.44	2,672	11	2,977	9.88	31	0.95
2004	294	3,504	8.31	2,695	10.80	3,106	9.37	32	0.93
2005	278	3,510	7.81	2,740	10.00	3,124	8.77	32	0.88
2006	311	3,517	8.84	2,805	10.73	3,117	9.66	32	0.98
2007	296	3,527	8.39	2,849	9.72	3,112	8.90	32	0.92
2008	302	3,546	8.52	2,883	10.48	3,160	9.56	32	0.95
2009	224	3,562	6.29	2,916	7.68	3,137	7.14	31	0.71
2010	319	3,577	8.92	2,935	10.87	3,148	10.13	31	1.02

Plan Implementation and Monitoring

Implementation of the strategies identified in this Plan will be guided and monitored by the Connecticut Strategic Highway Safety Plan Steering Committee. The committee will provide overall leadership, direction, and support for accomplishing the various safety initiatives and for monitoring progress towards meeting both the statewide goal and the goals in each of the emphasis areas. This committee will also be responsible for reporting results to the member agencies and obtaining endorsement from the Safety Program Leadership Executive Team.

The SHSP Steering Committee will meet periodically to oversee the implementation of the plan. A chairperson or chairpersons will schedule meetings, prepare meeting agendas, run each of the meetings, and arrange for the preparation of meeting minutes. This committee will be responsible for carrying out the mission, vision, goals, and strategies of the SHSP and for making future revisions and updates to the Plan.

This committee will assist in defining statewide safety priorities in each of the emphasis areas, identifying funding needs and sources, and providing overall guidance to assist in the implementation of the various safety strategies. A subcommittee or work group for each of the Emphasis Areas assists in the implementation of specific strategies.

Future of the SHSP

With the enactment of the latest transportation funding bill (MAP-21), the Federal Highway Administration (FHWA) requires each state to update its Strategic Highway Safety Plan (SHSP). The SHSP is a comprehensive plan to substantially reduce the vehicle related fatalities and serious injuries on Connecticut's roadways. Coordination and interaction with numerous State, local, and private safety stakeholders is required. The CTDOT recently hired a multi-disciplined professional engineering firm experienced in creating an approach to effectively reduce the number of highway fatalities and serious injuries on all public roads in Connecticut. The consultant will provide transportation safety planning support to CTDOT in developing and implementing a new SHSP to meet the requirements of MAP-21.

Part of the work for the new SHSP will be identifying and engaging stakeholders that have not been included in the past such as, but not limited to: Native American Tribal leaders, Fire Chiefs Association, Hospital Associations, and the American Automobile Association. Another part of the consultant's assignment will be to develop strategies to improve the local road safety program to better address the safety of all public roads.

In 2006, Connecticut developed its first SHSP based on the process recommended by the previous transportation funding bill, SAFETEA-LU. The SHSP followed a data driven, multidisciplinary approach involving the 4 E's of highway safety; engineering, education, enforcement and emergency medical services. Connecticut's SHSP was updated in 2010 under the direction of the Steering Committee. Currently, this bridging document between the 2010 SHSP and the new SHSP under MAP-21 has been developed. The SHSP Steering committee convened in January 2013 and set a six month goal for completion of the bridge document.

Performance Measure

The performance measure of the overall SHSP is the successful implementation of emphasis area improvements and reduction in the number of fatalities and serious injury crashes that occur on all public roads in Connecticut.

Emphasis Areas

It is critically important to provide a safe and efficient roadway system. The primary benchmark for traffic safety is the reduction in the rate of fatalities and serious injuries that occur because of motor vehicle crashes across the State each year. The State of Connecticut strives to enhance its safety program to ensure roadway systems are as safe as possible through the 4E's – Education, Engineering, Enforcement, and Emergency Medical Services (EMS).

This SHSP provides historic, trend and current data detailing the comprehensive scope of highway safety in Connecticut specifically for roadway elements and driver behavior.

To achieve the objective of this Plan, available crash data was analyzed, leading to the identification of data driven emphasis areas which were vetted at the Connecticut Safety Summit on August 28, 2006. The following emphasis areas were identified and endorsed by the participants and remain the safety emphasis areas for Connecticut. However, their descriptions have been enhanced through updates.

Emphasis Areas:

- Traffic Records and Information Systems
- Roadway Departure and Spot & Systematic Safety Improvement
- Pedestrians and Bicycles
- Work Zones
- Driver Behavior (Occupant Protection, Child Passenger Safety, Speed Enforcement and Distracted Driving)
- Commercial Vehicles
- Incident Management

To achieve the goal of this SHSP, data driven emphasis areas and strategies to reduce the number of fatal and serious injury crashes have been identified. Comprehensive, coordinated, and communicative safety initiatives of the 4E's will be developed and implemented for each emphasis area.

In addition to the strategies listed in each of the emphasis areas, the strategies discussed in the appropriate NCHRP Report 500 Series Implementation Guides will be used.

(<http://safety.transportation.org/guides.aspx>)

Traffic Records and Information Systems

Background:

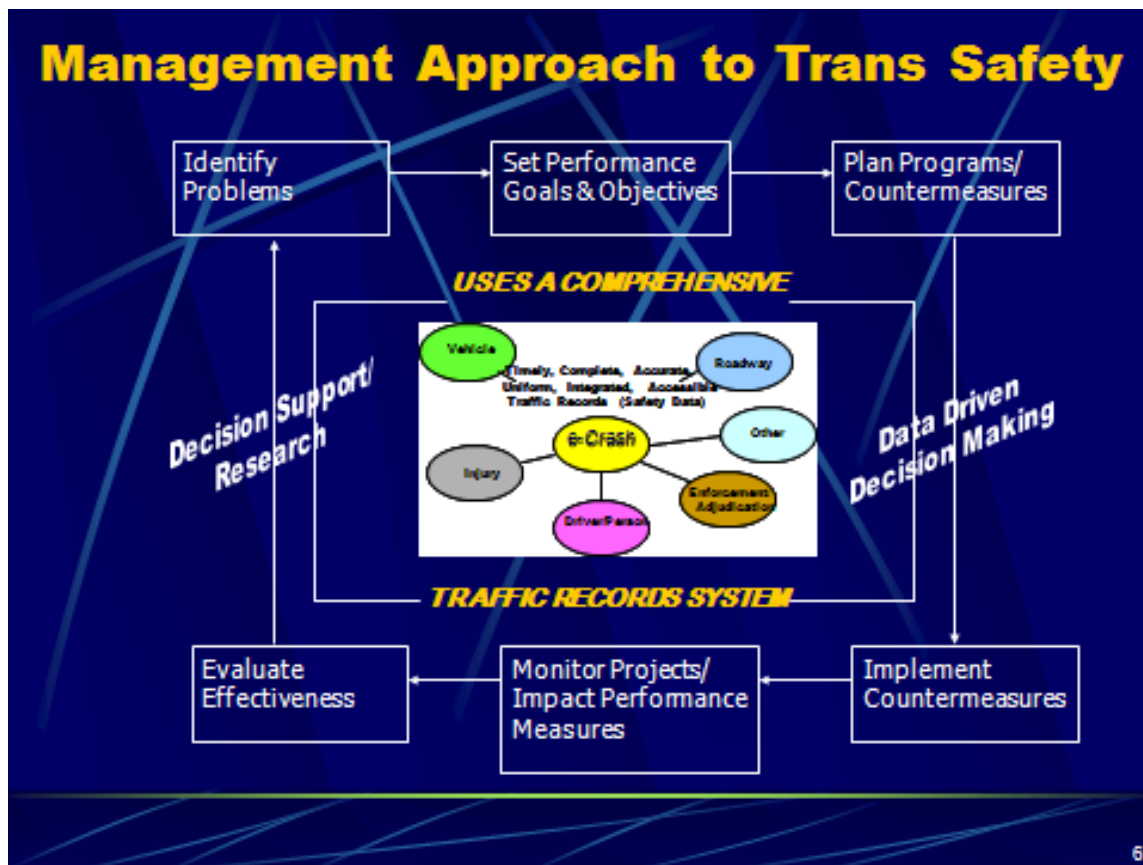
In order to evaluate the success of the SHSP it is important to have timely, complete, and accurate data that is integrated, uniform, and accessible to the highway safety user community in the State of Connecticut. Top priorities for the SHSP are improving the State's Traffic Records System in electronic field data capture of motor vehicle crash, traffic citation, and emergency medical services (EMS) response reporting as well as progress in the capture of data that meets minimum national standards.

Through its Traffic Records Strategic Plan (developed as a requirement for NHTSA SAFETEA-LU and now MAP-21 funding), Connecticut seeks to develop a more comprehensive traffic records system with capabilities to accurately identify safety problems, develop countermeasure programs, evaluate their effectiveness, and measure progress in data quality improvements while moving from a paper-based, labor-intensive traffic records processes to electronic data capture and processing. One of the key elements of this process is an effective and active Traffic Records Coordinating Committee (TRCC) consisting of a broad range of data collectors, managers, and users representing the six core data sets that make up a State Traffic Records system (crash, vehicle, roadway, citation, driver, and vehicle). The Connecticut TRCC meets monthly to be briefed on national initiatives, monitor progress in the Strategic Plan, discuss implementation issues and concerns, and to coordinate interagency efforts, where appropriate.

Connecticut's TRCC is comprised of the following stakeholder agencies/organizations:

- Department of Motor Vehicles
- Department of Emergency Services and Public Protection
- Department of Public Health
- Department of Transportation
- Office of Policy and Management
- Judicial Branch
- Connecticut Police Chief's Association
- New Britain Police Department
- East Hartford Police Department
- Council of Governments of the Central Naugatuck Valley
- Chief State's Attorney's Office
- Capitol Region Council of Governments
- South Western Regional Planning Organization
- University of Connecticut
- National Highway Traffic Safety Administration
- Federal Highway Administration
- Federal Motor Carrier Safety Administration
- Research and Consulting

A State's traffic records system should be operated in a fashion that supports both the highway safety planning process stipulated under NHTSA procedures, and the long-term goals of Strategic Highway Safety Plans as required by federal law and FHWA regulations. The planning process should be driven by a traffic records system strategic plan that helps State and local data owners identify and support their overall traffic safety program needs. The following graphic illustrates how data drives the highway safety planning process:



A History of Recent Improvements:

Following the recommendations made by the NHTSA sponsored Traffic Records Assessments conducted in 2007 and 2012, the State's annual update to its 2006 Traffic Records Strategic Plan, and the completion of an FHWA sponsored Crash Data Improvement (CDIP) Assessment in 2011, the Connecticut TRCC has stepped up efforts to take a more active role in developing projects to improve the quality of State highway safety crash, citation, and EMS data.

Early efforts under Section 408 of SAFETEA-LU focused on electronic field data capture for EMS providers. Today, a majority of ambulance services in the State are using this technology to provide patient care reports to the Office of EMS in compliance with National EMS Information System (NEMSIS) standards. The TRCC also supported development of an electronic citation pilot with the State Police. Processing times for electronic feeds of citation reports to the Central Infractions Bureau (CIB) have decreased significantly. Finally, major progress has been made in addressing the current paper based crash reporting system. The State Police began sending current crash data electronically to CTDOT in 2010. More importantly, a working group met to endorse a new set of data elements in conformance with Model Minimum Uniform Crash Criteria (MMUCC) and to promote the adoption of these elements in an electronic pilot project sponsored by the Capital Region Council of Governments (CROG).

Objective:

The Connecticut TRCC's objectives for the Traffic Records emphasis area in the SHSP are as follows:

- Develop a comprehensive, accessible, and user friendly traffic records system capable of providing reliable and responsive highway safety data critical to the development of policies and strategies that enhance the quality and effectiveness of Connecticut's highway safety programs.
- Develop and implement a Traffic Records Strategic Plan designed to build a data collection and management system, which can provide timely, complete, accurate, uniform, integrated, and accessible traffic records (safety data) to plan and manage highway and traffic safety programs.
- Implement an effective TRCC to provide leadership, direction, and consensus in developing and implementing highway safety data improvement projects.
- Foster the development of "data champions" to advocate and facilitate comprehensive statewide strategies for improvement in the six core data sets of Traffic Records.
- Coordinate performance measures as required by MAP-21 between the Traffic Records Strategic Plan and the SHSP.

Strategies:

The Connecticut TRCC will develop core data system improvement strategies that will include but not be limited to the following:

- ◆ Implementing Statewide *electronic field data capture* technology to collect motor vehicle crash, traffic citation, EMS, and other information. Development of data collection tools to capture all MMUCC 4.0 data fields for both State and local roadways.
- ◆ Developing of a CTDOT conforming XML reporting standard for all law enforcement agencies in the State.
- ◆ Leveraging *new technologies* (Web based tools, smart maps) to achieve cost savings and efficiency wherever possible.
- ◆ *Integrating and linking data* within electronic applications to improve data capture efficiency and quality and to minimize the burden on law enforcement.
- ◆ Increasing capabilities for *geo-spatial capture and analysis* of crash and other safety related data through promotion of GIS/GPS technologies.
- ◆ Establishing a State level capability to *integrate agency specific crash, citation, and racial profiling data* with other State law enforcement data-bases.

- ◆ Enabling law enforcement agencies to *share data* across jurisdictions and to employ dashboard data analysis technologies to enhance planning and allocation of resources.
- ◆ *Creating and tracking metrics* to improve the timeliness, completeness, and accuracy of crash data, including the location of crashes, demographics of persons involved, contributing factors, selective enforcement, occupant restraint use, emergency medical response, and injury outcome.
- ◆ *Incorporating national standards and guidelines*, such as the Model Minimum Uniform Crash Criteria (MMUCC), Minimum Inventory of Roadway Data Elements (MIRE), and National Emergency Medical Services Information System (NEMSIS) to improve the quality and uniformity of data capture.
- ◆ Promoting law enforcement *crash report training programs* to reinforce the importance of capturing timely and accurate crash data.
- ◆ Establishing *crash and other safety data repository capabilities* to enhance user access and analysis of State highway safety data for all Traffic Records stakeholders.

Performance Goals:

The following performance goals and measures will be used to monitor Traffic Records progress in the SHSP:

- Continued improvements in the timeliness, completeness and accuracy of crash, citation, and EMS data.
- Improved uniformity with national data standards such as MMUCC, MIRE, and NEMSIS.
- Improved integration of the field collection of crash and citation data (and other criminal justice data) within local and State data bases.
- Improved location coding and geo-spatial analysis capabilities to support a wide range of highway safety program improvements.
- Improved highway safety community access to highway safety data bases, analyses, and reports.

Performance Objectives:

A Crash Data Improvement Plan (CDIP) Business Plan (May 2012) and a Traffic Records Strategic Plan (June 2012) now includes the following crash data improvement projects:

1. Develop and pilot test, in collaboration with CRCOG, a MMUCC 4.0 compliant Web based electronic data capture tool (PR-1) designed to help law enforcement agencies more efficiently collect crash data in accordance with State standards (funded in Traffic Records Strategic Plan).

2. Develop a digital roadway network map to provide a highly accurate and detailed coding method that can integrate crashes with all roadway features.
3. Develop a crash data repository (CDR) at the University of Connecticut (UConn) that can provide a broad range of technical support and research services to the highway safety community (funded in Traffic Records Strategic Plan).
4. Implement a coordinated effort between UConn and CTDOT to reduce the current crash data backlog for paper PR-1s.
5. Work with the Criminal Justice Information System (CJIS) to develop a secure network for hosting and transmitting electronic crash data to a designated State repository. Funding was approved and set aside in a FY 2013 FHWA account. This project may need to be extended and additional funds allocated to create an interface with CTDOT or UConn.
6. Improve coordination and timelines among local law enforcement agencies for the submission of electronic crash data in accordance with a State approved xml standard (100 percent electronic crash reporting by January 2015).

Other crash related improvement projects under consideration and to be integrated into Phase II CDIP Business Plan:

1. Development of a CTDOT approved MMUCC 4.0 standard and conforming xml schema for use by third party RMS vendors to assist in electronic transmission of crash data.
2. Development of a front end “thick client” State electronic PR-1 data collection tool for agencies not using CRCOG’s Web based e-crash or CT Chief applications. As part of this project, purchase user licenses from Iowa DOT for Traffic and Criminal Software TraCS and from Iowa State University for an Incident Location Tool to enable customization of software to meet Connecticut’s needs. This project will also include costs for training and software development support from the TraCS maintenance and support vendor. Software will be distributed at no cost to interested cities and towns.
3. Development of additional software support for CRCOG to support e-crash as a “regional solution” in the event statewide hosting services cannot be secured. Tasks would cover local hosting services, dedicated overtime for field training, and software installation, possible upgrade of existing CAPTAINS software, interface with a State repository, and additional software integration to accommodate improved diagramming and location tools.
4. Work with the Department of Emergency Services and Public Protections (State Police) in developing an electronic field data collection pilot to integrate the MMUCC 4.0 Pr-1 with their existing RMS system. Under Phase II of this project, work with local customers of the State Police’s third party vendor to upgrade their RMS systems to accommodate MMUCC 4.0 crash data.
5. Development of a paper based MMUCC 4.0 PR-1 and pdf equivalent crash report for cities and towns not yet ready to convert to electronic crash reporting.

6. Development of an electronic user manual for the State MMUCC 4.0 PR-1 along with video and text help tools.
7. Work with CTDOT and UCONN in the development of a new data entry and editing system (CAS II) for the new MMUCC 4.0 PR-1.
8. Conduct a technology capabilities assessment and law enforcement outreach workshops to facilitate implementation of 100 per cent MMUCC compliant electronic reporting to the State CDR by January, 2015.
9. Provide technology support and training to law enforcement agencies not using State Police or CRCOG software applications for the collection of MMUCC 4.0 crash data.
10. Secure additional support to assure FARS data is collected in an efficient and timely way and can be analyzed beyond the standard tools provided on the NHTSA Web site.

Other Core Data System Projects Currently in the Traffic Records Strategic Plan:

1. Implement an electronic EMS run reporting system to collect data on every 911 call, focusing on NEMSIS data element requirements.
2. Create an application that enables the Judicial Branch's Centralized Infractions Bureau (CIB) to electronically receive traffic citation information from law enforcement agencies, automatically store information in the CIB citation database, and electronically process citations. In addition, build the following system enhancements:
 - Enable the e-citation application to accommodate Commercial Citations.
 - Enable the e-citation application to allow electronic viewing and disposition of citations in court locations.
 - Enable the e-citation application to provide a "paperless courtroom" with dedicated dockets for citations and enhanced opportunities for electronic "self-pay" options.
 - Provide printers/scanners and software to enhance additional law enforcement agency participation in e-citation.
 - Work with CRCOG to develop a Web based e-citation application that is integrated with e-crash.

Other strategies from the Traffic Records Strategic Plan include implementing the Connecticut Impaired Driving Records Information System (CIDRIS), the Commercial Vehicle Analysis Reporting System (CVARS), the Crash Outcome Data Evaluation System (CODES), the State Injury Surveillance System (ISS), and the Fatality Analysis Reporting System (FARS), as well as other initiatives, such as the Connecticut Integrated Vehicle and Licensing System (CIVLS) and desktop web-based data access/data analysis tools and training for all authorized users.

Countermeasures:

- TRCC will continue to meet to address MAP-21 application requirements and deadlines as well as to monitor progress in currently funded projects.
- CTDOT to publish MMUCC 4.0 data standard and to begin planning for technology support workshops for State and local law enforcement agencies.
- CRCOG and State Police e-crash pilots will continue to develop and test new MMUCC 4.0 software.
- CTDOT Office of Information Systems (OIS) team and UCONN to meet to make plans for data transmission protocols, data entry and editing, and the development of back end repositories.
- CTDOT will begin work with TraCS software product to develop client based stand-alone e-crash application for use by local law enforcement agencies not capable of using Web based technology.
- CDIP team will continue to meet monthly to address and coordinate five core crash data improvement projects currently in the Business Plan.
- CDIP team will develop a long-term budget leading to full implementation of a MMUCC 4.0 compliant crash data collection system in CT by January, 2015.
- CJIS Coordination team will meet biweekly to address planning and operational needs relative to deployment of the Web based CRCOG supported PR-1.
- CTDOT Policy and Planning will meet weekly to identify issues and action items requiring senior management oversight and intervention, as necessary.
- Connecticut will continue to have a high profile through presentations, workshops, and trainings at future national Traffic Records Forums.

Evaluation Process:

The Traffic Records emphasis area evaluation process will consist of the following steps:

1. Continuous update of performance measure goals in the areas of timeliness, completeness, accuracy, uniformity, integration, and accessibility for the six core highway safety data systems.
2. Benchmarking quantitative progress towards those goals in submission of annual incremental progress reports to NHTSA.
3. Case study process reviews of each project to develop best practice information on system efficiencies and cost savings.

4. Use of NHTSA Traffic Rerecords Assessments, updated CDIP reviews, and MIRE Assessments to monitor system development deficiencies relative to compliance with national Traffic Records Advisory standards.

References:

Other Plans and documents that have been used and/or referenced in the development of the Traffic Records emphasis area are as follows:

NHTSA Traffic Records Assessments (2007 and 2012)
NHTSA SAFETEA-LU Section 408 Requirements and MAP-21 Section 405 b Requirements
NHTSA Traffic Records Strategic Plans as updated 2006 through 2012
CDIP Assessment Report 2012
CDIP Business Plan May, 2012
FHWA Peer Exchange Report and Action Plan 2012
NHTSA Annual Highway Safety performance Plan-Traffic Records Program Area
TRCC Meeting Summaries and Slides

Roadway Departure and Spot & Systematic Safety Improvement

In accordance with Section 148 of Title 23 of the United States Code, each state as part of their SHSP shall have in place a crash data system with the ability to perform safety problem identification and countermeasure analysis. In addition, each state is required to identify hazardous locations, sections, and elements that constitute a danger to motorists, bicyclists, pedestrians, and other highway users. In Connecticut, these requirements are addressed by CTDOT's Suggested List of Surveillance Study Sites (SLOSSS) Program, which concerns the systematic review and treatment of locations having higher than expected crash histories. The SLOSSS has been a program for many decades consisting of a planning component, an implementation component, and an evaluation component.

In 1988, the American Association of State Highway and Transportation Officials (AASHTO) approved the National Strategic Highway Safety Plan with a goal of reducing the annual number of highway deaths by at least 5,000 by the year 2004. Guidelines were developed to assist states in developing strategies in 22 key emphasis areas to reduce fatalities by 10 to 15 percent for specific crash types.

In 2001, the Connecticut fatality rate of 1.03 per 100 Million Vehicle Miles Traveled was well below the national average rate of 1.51 for traffic-related fatalities. However, Connecticut did exceed the national average in the category of Roadway Departure Related Fatalities. Based on National Highway Safety Data at the time (CY 2001), the national average for Roadway Departure Related Fatalities was 55 percent while in Connecticut, 62 percent of the State's highway fatalities occurred in roadway departure collisions. For this reason, CTDOT accepted the invitation of AASHTO and selected lane departure crashes as a targeted crash type. The aim was to reduce fatal and severe injury crashes in the emphasis area. As a result, Connecticut became a lead state in this initiative.

Roadway Departure

Background:

The Connecticut effort to reduce run-off-the-road crashes began with the assembly of a task force, which included representatives from various CTDOT Offices, the Governor's Highway Safety Representative, and the FHWA. The committee analyzed State and local road crash data in order to formulate countermeasures to reduce lane departures in an efficient manner. The Task Force's efforts resulted in the development of a "Strategic Plan for Reducing Roadway Departure Fatalities and Severe Injuries in Connecticut" in April 2005.

The groundwork started by the AASHTO Lead State Initiative led to the establishment of "Roadway Departure" as an emphasis area in the State's inaugural September 2006 Strategic Highway Safety Plan (SHSP). The first meeting of the Roadway Departure Emphasis Area Committee occurred during the Connecticut SHSP Summit in October of 2006. During that meeting it was determined that a broader representation was needed to address the roadway departure issue on the State's highway system. As a result several new members were recruited

to address the viewpoint of the older driver, municipalities, law enforcement, and transportation education. The expanded membership of the Roadway Departure Emphasis Area Committee now includes representation from the private safety industry, the American Association of Retired Persons, Regional Planning Organizations, municipal public works, municipal police, University of Connecticut Technology Transfer Center, CTDOT Maintenance, CTDOT Engineering, and the Federal Highway Administration. The group meets periodically throughout the year to discuss strategies and the challenge of bringing the roadway departure crash reduction initiative to the local road system.

Objective:

Connecticut strives to reduce the State's lane departure fatality rate to a point at or below the national average.

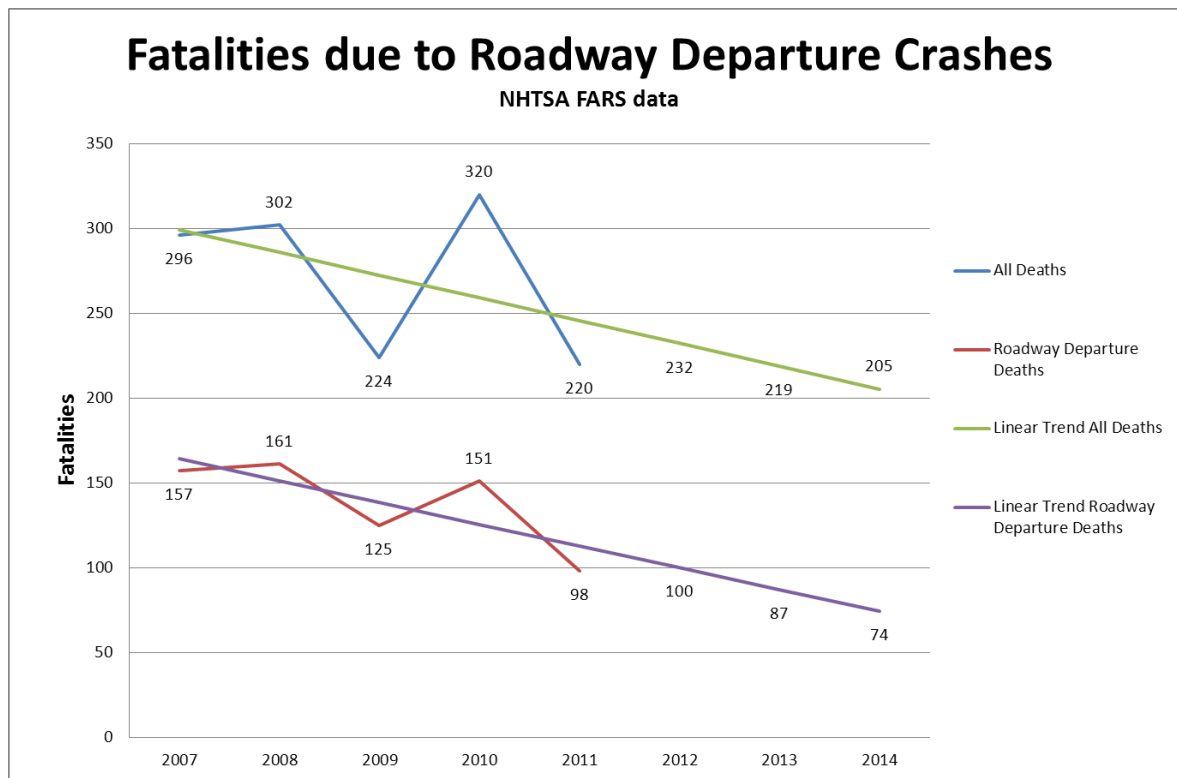
Strategies:

- ◆ Upgrade guide rail systems and concrete barrier installations to the Manual for Assessing Safety Hardware (MASH) guidelines by identifying locations that have outdated attenuation systems and where there are a number of fixed object crashes involving guide rail.
- ◆ Enhance curve warning signing and delineation by installing curve and chevron signs with fluorescent sheeting on the sign and sign post.
- ◆ Improve traffic records and information systems by developing a crash data collection program that can integrate with the roadway data files.
- ◆ Continue with the existing program to evaluate locations where a statistically significant number of wet pavement crashes occur.
- ◆ Continue to install rumble strips on limited-access roadways.
- ◆ Continue the Merritt Parkway Safety Improvement Program.
- ◆ Targeted enforcement initiatives, particularly at times when crash data analysis indicates significantly greater numbers of fatal and severe injury fixed-object crashes.
- ◆ Increase shoulder area where appropriate.
- ◆ Consider pilot program for centerline rumble strips.

Performance Goal:

For the latest calendar year available (2010), Connecticut continues to experience a lower overall fatality rate for all crash types of 1.02 fatalities per 100 Million Vehicle Miles Traveled as compared to the national average 1.11 fatalities per 100 Million Vehicle Miles Traveled. Data from Connecticut's Accident Summary Tables (CAST) indicates that in 2010 there were 299 fatal crashes on all State roadways and 167 (55.8%) of them were roadway departure type

crashes. The 167 fatal roadway departure crashes resulted in 191 deaths. Over 70% of the fatal roadway departure crashes occurred on the State highway system. In 2009, roadway departure crashes accounted for 53% of all national fatal crashes. To date, the majority of the efforts to reduce roadway departure collisions have involved State maintained highways. The data suggests that continued effort is needed to reduce roadway departure on the state system. Initiatives for the local road system would also be beneficial in reducing this type of collision in Connecticut.



Performance Objectives:

To institute a systematic program of lane departure crash countermeasures appropriate for Connecticut with the objective of lowering its lane departure rate to a point at or below the national average and, thus, to contribute to a reduction in the nation's overall traffic related fatality rate.

Countermeasures:

Regularly scheduled projects for the installation of edge line rumble strips on limited access roadways is one systematic approach to reducing the roadway departure crashes on roads of that type. Other systematic improvements are being considered such as centerline rumble strips on secondary roads as a pilot program. Under annual resurfacing projects, CTDOT has recently implemented a reduced travel lane width on secondary State roadways where appropriate. This not only has a benefit to bicyclists and pedestrians but also increases the shoulder recovery area.

Under the High Risk Rural Road Program (HRRRP) CTDOT pursued a project for the systematic approach to reduce the number of fatal and severe injury crashes on those rural major collector state-maintained roadways that exceed the average severity rate for this roadway classification. Specifically, improved curve delineation, at those qualifying rural routes where the curve radius is at least 15 degrees. The horizontal curve delineation consists of advance horizontal alignment signs and horizontal arrows or chevron alignment signs through the curve. The warning signs have fluorescent yellow sheeting and post delineators.

State of Connecticut Reported Roadway Departure Fatal & Type A (Incapacitating) Injury Crashes

Year	Single-vehicle Run-off-road		Head-on Collisions		Opposite Dir. Sideswipes		Total Roadway Departure			Total Fatal & Type A.			Percent of Total Crashes		
	Fatal	A Inj.	Fatal	A Inj.	Fatal	A Inj.	Fatal	A Inj.	Comb.	Fatal	A Inj.	Comb.	Fatal %	A Inj. %	Comb. %
2001															
All Roads	103	494	41	96	0	125	144	715	859	290	2742	3032	49.6	26.1	28.3
State Roads	67	194	36	49	0	60	103	303	406	214	1427	1641	48.1	21.2	24.7
Local Roads	36	300	5	47	0	65	41	412	453	76	1315	1391	54.0	31.3	32.6
2002															
All Roads	112	432	35	100	10	105	157	637	794	301	2266	2567	52.1	28.1	30.9
State Roads	65	191	32	59	4	48	101	298	399	203	1208	1411	49.7	24.7	28.3
Local Roads	47	241	3	41	6	57	56	339	395	98	1058	1156	57.1	32.0	34.2
2003															
All Roads	108	459	21	82	20	96	149	637	786	277	2142	2419	53.7	29.7	32.5
State Roads	59	200	19	54	18	53	96	307	403	195	1221	1416	49.2	25.1	28.5
Local Roads	49	259	2	28	2	43	53	330	383	82	921	1003	64.6	35.8	38.1
2004															
All Roads	119	424	27	95	15	84	161	603	764	280	2078	2358	57.5	29.0	32.4
State Roads	84	175	23	55	13	49	120	279	399	205	1139	1344	58.5	24.5	29.7
Local Roads	35	249	4	40	2	35	41	324	365	75	939	1014	54.6	34.5	36
2005															
All Roads	98	445	26	74	10	91	134	610	744	262	1943	2205	51.1	31.4	33.7
State Roads	54	183	18	44	7	54	79	281	360	170	1032	1202	46.5	27.2	29.9
Local Roads	44	262	8	30	3	37	55	329	384	92	911	1003	59.8	36.1	38.3
2006															
All Roads	107	439	32	50	7	117	146	606	752	293	1942	2235	49.8	31.2	33.6
State Roads	63	196	25	35	6	63	94	294	388	201	1080	1281	46.8	27.2	30.3
Local Roads	44	243	7	15	1	54	52	312	364	92	862	954	56.5	36.2	38.2
2007															
All Roads	105	494	36	72	5	100	146	666	812	269	2064	2333	54.3	32.3	34.8
State Roads	61	208	28	42	3	49	92	299	391	190	1088	1278	48.4	27.5	30.6
Local Roads	44	286	8	30	2	51	54	367	421	79	976	1055	68.4	37.6	39.9
2008															
All Roads	108	459	30	62	11	76	149	597	746	277	1857	2134	53.8	32.1	35
State Roads	67	218	25	35	9	43	101	296	397	191	1065	1256	52.9	27.8	31.6
Local Roads	41	241	5	27	2	33	48	301	349	86	792	878	55.8	38	39.7
2009															
All Roads	103	423	22	77	1	70	126	570	696	214	1733	1947	58.9	32.9	35.7
State Roads	74	216	20	56	1	40	95	312	407	153	998	1151	62.1	31.3	35.4
Local Roads	29	207	2	21	0	30	31	258	289	61	735	796	50.8	35.1	36.3
2010															
All Roads	138	422	28	87	1	64	167	573	740	299	1683	1982	55.9	34.1	37.3
State Roads	93	192	26	54	1	32	120	278	398	213	925	1138	56.3	30.1	35
Local Roads	45	230	2	33	0	32	47	295	342	86	758	844	54.7	38.9	40.5
2011															
All Roads	102	330	18	67	6	41	126	438	564	209	1404	1613	60.3	31.2	35.0
State Roads	69	153	16	45	5	27	90	225	315	153	807	960	58.8	27.9	32.8
Local Roads	33	177	2	22	1	14	36	213	249	56	597	653	64.3	35.7	38.1

Spot & Systematic Safety Improvement

HSIP	<i>Highway Safety Improvement Program</i>
RHGXP	<i>Railroad Highway Grade Crossing Program</i>
HRRRP	<i>High Risk Rural Road Program</i>
SLOSSS	<i>Suggested List of Study Surveillance Sites Program</i>

Background:

Since the Federal Aid Road Act of 1916 and the development of a national highway system, the basic law governing the Federal-Aid System (Title 23, U.S. Code) has outlined regulations of highway safety, design, and construction. The Federal Highway Act of 1965 (Highway Beautification Act) includes an amendment requiring that after December 31, 1967 each state must have a highway safety program, approved by the Secretary of Commerce, designed to reduce traffic crashes and hazardous crash conditions. The August 1965 Policy and Procedure Manual (PPM) 21-16 included a requirement that the states have a formal highway safety improvement program (HSIP).

Federal Acts in following years have modified the specifics of program definitions and funding but the thrust has remained unchanged - each state should develop and implement on a continuous basis, a formal highway safety improvement program (HSIP) consisting of: (1) a planning component, (2) an implementation component, and (3) an evaluation component. Six basic elements needed are: data collection, data analysis, engineering studies, project prioritization, project implementation, and project and program evaluation. CTDOT's program is approved by the FHWA.

In order to reduce the number and severity of crashes and decrease the potential for crashes on all highways, as established in the Code of Federal Regulations, Title 23, Part 924, a State is required to develop and implement a highway safety improvement program, which has the overall objective of reducing the number and severity of crashes and decreasing the potential for crashes on all highways. Connecticut's program was documented through a Connecticut Highway Safety Program Process Review in September 2008. One aspect of the HSIP concerns the systematic search and treatment of locations having abnormally high crash histories.

Identification and surveillance of locations displaying higher than expected crash rates on the highway system are accomplished primarily through a computerized surveillance system utilizing traffic record files maintained by CTDOT's Bureau of Policy and Planning. Those files consist of: (1) a crash record file, (2) an average daily traffic file, and (3) an inventory of certain roadway characteristics. The basic search of the crash file to identify locations that may have an abnormal crash history can take many forms. Usually the entire system is surveyed based upon all crashes. From time to time, special purpose surveys may be conducted for a limited time period in an effort to assess the magnitude and extent of perceived or potential safety problems. Such special purpose surveys have included pedestrian, fixed-object, utility pole, injury, fatal, wrong-way and wet pavement crashes.

CTDOT annually runs a computer program utilizing the three files described above. The results are lists of locations that appear to have an unusually high crash rate. These lists are referred to as SLOSSS lists. In that computer program, average crash rates and number of crashes are computed for the various groups of locations described above. Based upon those average values,

a threshold of abnormally high numbers and rates is developed for each location. The final lists are then submitted to the FHWA for approval and then it is submitted to the CTDOT Division of Traffic Engineering.

The process described is not the sole determinant in identifying locations having problematic characteristics. Many locations with crash rates not abnormally high will demonstrate crash type or severity patterns symptomatic of the problematic characteristic for a particular location. Other locations may have design characteristics similar to a design characteristic (e.g., rigid sign posts, poor sight line) determined to be problematic. After an engineering study is conducted to identify a problem and remediation, these may also be considered for safety improvement with the endorsement of the FHWA.

Another aspect of the HSIP concerns the Railway-Highway Grade Crossing Program. Grade crossing improvement projects are developed from an established priority list. This list is maintained by the CTDOT Division of Traffic Engineering and, through continuing investigation and review, is updated and revised to meet changing conditions. This list is established by use of a hazard index (HI) and is based on relative hazards for each crossing, which is an adaptation of the New Hampshire Index. The priority list accounts for vehicular traffic volumes, train counts, and vehicle/train collisions. After the priority list is established and on-site reviews are conducted, projects are initiated. Recommended project memoranda are then forwarded to initiate crossing improvements in future design years. The Program and the List do not include private crossings.

SAFETEA-LU introduced a new set-aside provision known as the High Risk Rural Roads Program (HRRRP), codified as 23 U.S.C. § 148(f). This program is a component of the HSIP. For funding under this program, a roadway must be functionally classified as a rural major or minor collector, or a rural local road. The HRRRP has been implemented through a systematic approach to curve delineation, at those qualifying rural routes where the curve radius is at least 15 degrees. The current federal transportation funding program, Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law on July 6, 2012. MAP-21 establishes a Special Rule for High Risk Rural Road (HRRR) safety which requires states, where the fatality rate on rural roads increased over the most recent two-year period, to obligate a specified amount of funding towards HRRR safety projects in the next Federal Fiscal Year (FFY). Connecticut is one of seven states for which the Special Rule applies in FFY 2014.

Objective:

To reduce the number of locations on all public roadways that experience higher than expected crash histories.

Strategies:

- ◆ Location Analysis & Report – Location studies are as extensive as necessary to affect an appropriate course of action. Root causes of crash patterns and trends are identified. Alternative improvements are considered and evaluated in terms of cost, effect upon safety, environmental considerations, changes in traffic flow characteristics, local input and effect upon other modes of transportation. A report is prepared for each location or similarly characteristic areas studied to adequately document the situation and course of action.

- ◆ Improvement Implementation – The CTDOT Division of Traffic Engineering either prepares service memorandum for improvements that can be implemented by State forces or recommends projects for these safety improvements. Priorities may be determined by the economic analysis (B/C ratio), while also considering roadway design continuity and other qualitative benefits that would be derived. The entire scope of work involved including right-of-way, utilities, surveys, estimating, involving by other units, etc., is considered.
- ◆ Local Road Accident Reduction Program (LRARP) – through solicitation of the Regional Planning Organizations (RPO) for recommended improvements on behalf of their member towns, to address identified hazardous elements. These improvements may include signal enhancements, minor geometric improvements, roadside obstacles, sight line conditions, hazards to pedestrians, and poor or unmarked roadways.
- ◆ Collaborate with UCONN on a query tool for the crash data repository to create an identification tool that can be used to expand a SLOSS type program to local roadways.
- ◆ Safety Circuit Rider Program – to present transportation safety-related information training and support to local governments and other groups and offer suggestions for improving local roadway safety. This service also provides programs on work zone safety, MUTCD requirements, retro-reflectivity, roadside safety, excavation safety, pavement markings, etc.
- ◆ CTDOT will be reaching out to communities that have identified High Risk Rural Roads to seek their interest in participation in a statewide stop sign improvement project for local roads.
- ◆ CTDOT will continue to explore systematic safety treatments that can be implemented on like roadways to produce a proactive approach to safety improvement.

Performance Goal:

To identify areas that experience higher than expected crash histories for the purpose of recommending remedial action through spot safety improvement projects or systematic treatment of all roads with proven safety countermeasures.

Performance Objective:

To reduce the number of locations Statewide that experience higher than expected crash rates. In order to determine if the objectives are being satisfied, certain safety improvement projects are evaluated (before/after study). In order to judge the merits of an improvement and determine if its effectiveness in reducing crashes is statistically significant, a chi-square test is utilized with a 90 percent confidence level.

A semi-annual summary report is prepared by the CTDOT Division of Traffic Engineering, to identify the progress being made to study locations on the SLOSSS. Locations that have been identified and recommended for construction projects to implement the improvement are included on the quarterly safety project listing. Additionally a quarterly report is submitted to the FHWA to identify projects that have been recommended for implementation using safety funds.

In addition, evaluations may be prepared for improvement types as well. These programs may consist of projects that have the same safety classification code (e.g., traffic signals) or they could be specific improvements on a length of roadway such as gore area improvements on an expressway. These project and program evaluations are prepared as the two year “After” experience becomes available and may be included in the Annual Safety Report to the FHWA.

Countermeasures:

CTDOT is working with the University of Connecticut Transportation Safety Research Center (CTSRC) on improved crash data reporting tools for improved identification of spot locations for study. Work will continue towards developing improved reporting tools for both the state and local roadway system. Additionally, CTDOT will be working with the LTAP Center at UCONN to fully develop effective Safety Circuit Rider Program.

CTDOT will be exploring and implementing more systematic proven safety countermeasure treatments such as, but not limited to, traffic signal back plate reflective strips, wrong-way signing and marking improvements, stop sign replacement initiatives, centerline rumble strips, etc.

Pedestrians and Bicycles

Background:

Non-motorized traveler's (Users) safety is an essential element of any Statewide Safety Program due to the unequal risk of serious injury or fatality as a percentage of all crash types. These Users are bicyclists and pedestrians and when motorized vehicle / non-motorized user crashes occur, it is simple for the laymen to understand the non-motorized user is going to fare worse. Due to this type of conflict, it can be seen why these users are at a much higher risk for sustaining serious injury or being killed than a motor vehicle driver.

Since 1995 non-motorized user crashes have comprise approximately one percent of the State total, but the users account for on average 14 percent of all traffic fatalities and 10 percent of those who are severely injured.

The following charts show the Connecticut CAST data in fatalities and injuries from pedestrian and bicycle crashes for the past several years:

PEDESTRIAN	Occurrences			
<i>Year</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>
Pedestrian Fatal	47	27	49	26
Pedestrian Fatal*	47	27	47	26
Severe Injury*	188	199	188	177
Serious Injury*	474	479	590	455
Minor Injury*	372	360	359	398
Property Damage Only*	87	96	90	40
Pedestrian Total Injuries*	1168	1161	1274	1096
BICYCLE	Occurrences			
<i>Year</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>
Bicycle Fatal	6	1	7	8
Bicycle Fatal*	6	1	7	8
Severe Injury*	91	77	59	66
Serious Injury*	314	298	343	317
Minor Injury*	190	169	193	172
Property Damage Only*	126	116	132	59
Bicycle Total Injuries*	727	661	734	622
*Crashes				

Objective:

To provide a safe environment for non-motorized users by targeting specific demographics and areas of the State with the highest accident and injury history and looking for improvement options to reduce accidents for these areas.

Strategies:

- ◆ Build an effective, safe, non-motorized user network by:
 - Ensuring that all projects are designed and built with complete streets initiatives to ensure the transportation facility is safe and inviting for all users.
 - Extending and improving the off-road bicycle and pedestrian network
 - Ensuring that Safe Routes to School are included in projects if the infrastructure is warranted.
 - Ensuring that seniors are addressed in infrastructure projects.
 - Collaborating with towns and regions to implement traffic calming measures in high-volume pedestrian areas.
 - Providing assistance to communities and Regional Planning Organizations (RPOs) for local pedestrian safety improvement projects, including sidewalk construction.
- ◆ Examine the causes of non-motorized accidents in order to develop and implement effective counter measures by:
 - Improving data and data analysis
 - Performing regional studies of pedestrian and bicycle fatalities, trends, causes, locations, and factors in RPOs.
 - Identifying and studying areas with a high incidence of non-motorized users serious injury and/or fatality
 - Evaluating state of the art safety measures.
- ◆ Improve motorist awareness of and respect for non-motorized users by:
 - Expanding upon the Statewide “Share the Road” and non-motorized user awareness campaign providing information to motorists, bicyclists, pedestrians and equestrians.
 - Improving education for motor vehicle operators by providing content for revisions to the State driver’s manual and Commercial Driver’s License CDL manual and improvements in driver education instruction offered in the State.
 - Providing grants to local police departments to provide for increased enforcement of existing traffic regulations, including speed limits and crosswalk laws, in areas with high non-motorized traffic.
 - Providing training to police officers on the rights and duties of bicyclists and pedestrians.
 - Collaborate with local advocacy groups to extend awareness through all means available.
- ◆ Place special emphasis on the safety needs of children and seniors by:
 - Supporting the National and State initiatives of the Safe Routes to School program
 - Continuing to support and fund the Safe Routes to School non-infrastructure program.
 - Reaching out to seniors through AARP and other means available to educate these groups on safe and legal pedestrian use.

- ◆ Link non-motorized safety to broader community objectives such as public health, quality of life, and environment by:
 - Encouraging town planning and zoning departments to develop requirements to ensure that new residential communities provide non-motorized connections to each other and to stores and schools.
 - Coordinating with town park and recreations departments to develop programs to promote the use of multi-use trails. Developing partnerships to promote non-motorized travel and to advance bicyclist and pedestrian safety.

Performance Goal:

To identify locations that experience higher accident histories in order to recommend actions for improvements to rectify these accidents locations with the goal of reducing the number of fatalities and personal injuries in each *at risk* demographics by at least 10 percent by 2017.

Performance Objectives:

1. Build an effective, safe, non-motorized transportation network.
2. Examine the causes of non-motorized accidents in order to develop and implement effective counter measures.
3. Improve motorist awareness of and respect for no-motorized users.
4. Place special emphasis on the safety needs of children and seniors.
5. Link bicyclist and pedestrian safety with broader community objectives such as public health, quality of life, and environment.
6. Identify additional dedicated funding and partnerships to advance bicycle and pedestrian safety.

Countermeasures:

Collaboration with the legislatively created Bicycle and Pedestrian Board – collaborate and act as the administrative unit for this board. Work with the board to address a broad range of non-motorized user issues and challenges.

Perform data analysis - to determine if there are “hot spot” locations for at risk demographic groups and utilize the Complete Streets Committee to bring this into the forefront of CTDOT realization so that resolutions can be found.

Continue educational outreach to school age children - on proper technique and use of the transportation network. This will not only help the children be safer on their use of the transportation network today, but lay the groundwork for better understanding as they mature in adult motor vehicle drivers. This will allow better sharing of the road with all users.

Complete Streets Committee – Creation of the Complete Streets Committee within CTDOT to ensure all projects, where feasible, are designed and constructed with complete streets measures included.

Renewal of the Safe Routes to School Non-Infrastructure program – this provides assistance to schools to make their school walking and biking friendly. It also has a large education component so that Connecticut’s youth can learn the rules of the road at an early age.

Continued refinement of the Bicycle and Pedestrian Assessment Form – this form must be completed for every CTDOT project and aids the designers in addressing the needs of non-motorized users.

Work Zones

Background:

Key transportation bills and regulations have been the foundation for making significant progress in the areas of work zone safety. The Intermodal Surface Transportation Efficiency Act (ISTEA) signed into law in 1991 required the development and implementation of a work zone safety program that focuses on improvements at highway construction sites by enhancing the quality and effectiveness of traffic control devices, safety appurtenances, traffic control plans, and bidding practices for traffic control devices and services. The Work Zone Safety and Mobility Rule published in 2004 amended the Federal Highway Administration (FHWA) regulation 23 CFR 630, Work Zone Safety and Mobility, and requires a broader approach concerning safety and mobility impacts during project development and implementation processes by developing strategies to provide for worker safety and efficient construction. In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law and established the Highway Safety Improvement Program and increased funding to make significant progress in reducing highway fatalities. The law required strategic highway safety planning that focuses on results, and development of other programs to target specific areas of concern, such as work zones, older drivers, and pedestrians, including children walking to school. In June 2012, MAP-21 was passed into law and continues the Highway Safety Improvement Program and creates a streamlined, performance-based, and multimodal program.

CTDOT in partnership with the FHWA has taken a multi-faceted approach to comply with these laws and regulations. New laws and regulations that have been enacted at the State and Federal levels are integrated into guidelines, policies, and regulations in the fields of planning, engineering, education, and enforcement. FHWA has and continues to review the State's conformance at appropriate intervals.

Objective:

The overall objective is to reduce delays and crashes in and around work zones through the use of effective strategies including performance measures that address the safety and mobility needs of road users, workers, and others.

Strategies:

CTDOT needs to establish and implement strategic goals and performance measures in order to evaluate and mitigate congestion delays and crashes in work zones and accurately relate benefits to actions evaluate and mitigate congestion delays and crashes in work zones. Based on the 2010 and 2011 Work Zone Mobility and Safety Self Assessments, and the 2011 Work Zone Process Review (WZPR), the following action item areas are:

- ◆ Establish strategic goals specifically to reduce congestion and delays in work zones.
- ◆ Implement strategic goals specifically to reduce crashes in work zones.

- ◆ Establish performance measures (e.g., vehicle throughput or queue length) to track work zone congestion and delay.
- ◆ Implement performance measures (e.g., crash rates) to track work zone crashes.
- ◆ Collect data to track, analyze and evaluate work zone congestion and delay performance.
- ◆ Collect data to track, analyze and evaluate work zone safety performance.
- ◆ Conduct customer surveys to evaluate work zone traffic management practices and policies on a Statewide/area-wide basis.
- ◆ Develop strategies to improve work zone performance based on work zone performance data and customer surveys.

Performance Goal:

CTDOT's goal is to reduce crashes by 50 percent from 1,348 in 1995 to 675 by the year 2014. The most recently reported data indicates that CTDOT continues to move towards its goal with a total of 892 reported crashes for 2011. Reduction of length of traffic queues as a result of delays in work zones has not been effectively measured in Connecticut and work continues in this area to find a valid means to do so.

Performance Objectives:

Connecticut Department of Transportation Accident Summary Tables (CAST) Furnished from the Bureau of Policy and Planning

* May include some fatal crashes in which injuries were sustained

CONNECTICUT WORK ZONE SAFETY CRASH DATA										
YR	# Fatal Crashes	# Fatal	% Fatal per total	*Injury Acc.	# Injuries	# Type A injury Crashes	% Type A per total	Property Damage	Total Crashes	% Combined Fatal + Type A
1995	5	5	0.36%	439	640	42	3.04%	941	1383	3.40%
1996	5	5	0.35%	415	617	27	1.91%	997	1415	2.26%
1997	1	1	0.08%	446	607	25	2.02%	788	1235	2.11%
1998	6	7	0.50%	376	565	28	2.35%	811	1191	2.85%
1999	4	5	0.31%	404	604	20	1.55%	882	1289	1.86%
2000	7	7	0.54%	366	545	25	1.92%	934	1305	2.45%
2001	4	4	0.36%	341	484	23	2.05%	780	1122	2.41%
2002	1	1	0.09%	322	437	19	1.71%	789	1111	1.80%
2003	2	2	0.17%	310	430	11	0.94%	864	1176	1.11%
2004	4	4	0.30%	329	471	14	1.07%	984	1314	1.37%
2005	4	4	0.42%	253	354	9	0.94%	702	955	1.36%
2006	2	2	0.27%	219	285	16	2.14%	526	747	2.41%
2007	2	2	0.18%	247	358	25	2.27%	851	1099	2.46%
2008	6	7	0.56%	224	298	16	1.48%	852	1079	2.04%
2009	6	6	0.70%	145	207	7	0.82%	702	852	1.53%
2010	2	2	0.26%	160	211	8	1.06%	596	758	1.32%
2011	3	3	0.34	170	220	11	1.23	721	892	1.57%
Total	64	67	0.34%	5166	7333	326	1.68%	13720	18923	2.00%

- For 2011 the greatest percentage of crashes occurred between the hours of 11:00 to 11:59 a.m. and from 2010 to 2011 there was a 200% increase in reported crashes between 7:00 p.m. and 7:59 p.m.
- 34% were rear-end type collisions with the top 3 contributing factors following too close (28%), driver lost control (13%). improper lane change (10%).
- “Following too close” continues to be the highest contributing factor accounting for over 25 percent of all reported crashes and as expected it resulted in 34 percent of crashes being a “rear-end” type of collision.

Countermeasures:

CTDOT is implementing the Work Zone Improvement Plan (WZIP) to support its objective and work towards performance measures that concentrate on reducing work zone congestion and delays, and enhance the safety of workers and motorists. This will be done through the establishment of policies, strategies, processes and tools to manage work zone mobility and safety impacts during project planning, design, and construction and maintenance activities. WZIP has two working groups, the Work Zone Operations Working Group and the Work Zone Performance Measures Working Group. A chairperson presides over each working group and decisions within the group are made by general consensus. These Working Groups will exist as an implementation tool for the Strategic Highway Safety Plan (SHSP) objectives and each chairperson is responsible to the SHSP Work Zones safety emphasis area leader being referred to as the “Champion.”

The SHSP Work Zones Champion is not only an active participant in the WZIP, but is also a member of the SHSP Steering Committee. The Champion will steer the WZIP chairpersons in a direction consistent with the policy objectives of the broader SHSP. The Champion provides the conduit for feedback for future SHSP updates, and manages changes to the emphasis area. The Champion and the chairpersons will ensure that the recommendations of the WZIP are brought to the appropriate agency management levels for implementation.

Some of the areas being addressed are:

1. **Policy** – Implementation of revisions to plans, processes, and procedures developed in cooperation with FHWA to manage work zone impacts. The current policies in place are:
 - a. Policy No. E&C – 46, Systematic Consideration and Management of Work Zone Impacts dated April 8, 2011.

In establishing this Work Zone policy, CTDOT’s objectives are to:

- Provide a high level of safety for both workers and the public.
- Minimize congestion and community impacts.
- Provide both maintenance forces and contractors adequate access to the highway to efficiently conduct their work.

- b. Policy No. E&C – 40 Work Zone Safety and Accessibility dated April 8, 2011

In order to achieve a safe and accessible highway environment during construction and maintenance periods, a uniform set of vehicular traffic control plans have been developed to establish a consistent application of traffic control patterns. These plans were developed using the principles set forth in the Manual of Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration in cooperation with the American Association of State Highway and Transportation Officials.

2. **Transportation Management Plan (TMP)** – The CTDOT develops TMP’s for “significant” projects to comply with the Work Zone Safety and Mobility Rule, as codified in 23CFR630, Subpart J and in consideration of CTDOT Policy No. E&C – 40 and 46. A significant project is defined as a project that, alone or in combination with other concurrent projects nearby, is anticipated to cause

sustained work zone impacts (i.e., mobility or congestion and worker/traveling public safety) that are greater than what is considered tolerable in engineering judgment. The TMP includes a Temporary Traffic Control (TTC) plan, and addresses operational strategies, including public information and outreach.

3. **Education** -Educating the agency staff from the different departments and divisions on the overall policy and the policy provisions. Educating other applicable regional stakeholders, contractors and consultants, the media, community and business representatives, and industry trade associations regarding the agency's policies and policy provisions.
4. **Training** – As required in 23 CFR 630.1008(d), personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone related transportation management and traffic control must be trained, appropriate to the job decisions each individual is required to make. Individuals may gain this training through CTDOT approved courses. For law enforcement personnel, the Highway Work Zone Safety Advisory Council has developed a program that is available to the Division of State Police, the Police Officer Standards and Training Council and each municipal police department based on the FHWA Work Zone Safety Training Course entitled “Safe and Effective Use of Law Enforcement Personnel in Work Zones.” The program is administered through the UCONN Transportation Institute Technology Center.
5. **Work Zone Safety and Mobility Process Review** - completed during the 2010 calendar year to comply with the requirements of 23 CFR 630, Preconstruction Procedures, Subpart J - Work Zone Safety and Mobility Report. The process review identified two areas, Leadership and Policy and Program Evaluation that were identified as needing improvement.
6. **Responsibilities** – Assigning specific policy work zone safety and mobility implementation roles and responsibilities to different departments and personnel/positions that apply to the different stages of program delivery consistent with the training requirements in 23 CFR 630.1008(d).
7. **Traffic Records** – Data and information to be collected and maintained in the support of design, construction, and operational decisions that affect the safety and mobility of the traveling public related to highway and roadway work zones. Collaborate with the UCONN crash data repository (CDR) and the Connecticut TRCC.
8. **Self-Assessment** – Beginning in 2003, FHWA Division Offices have worked in partnership with CTDOT to complete a Work Zone Mobility and Safety Self-Assessment (WZ SA) each year, to assess Connecticut’s work zone practices and program. The WZ SA tool consists of a set of questions designed to assist those with work zone management responsibilities in assessing their programs, policies, and procedures against many of the good work zone practices in use today. The goal is to evaluate the progress made since the last WZ SA and to reassess program initiatives both at the local and state levels.
9. **Enforcement** – Consider a variety of methods and technologies that can be used to help manage and enforce speed limits as well as other motor vehicle laws in work zones, including the use of law enforcement officers, automated enforcement, speed advisory systems, and variable speed limit (VSL) systems.

Driver Behavior

Occupant Protection, Child Passenger Safety, Speed Enforcement and Distracted Driving

Much of the data found in the Driver Behavior section of this document is sourced from Connecticut's Highway Safety Plan (HSP). This document is updated annually. For more detailed information in the area of driver behavior, please refer to the most current HSP.

Background:

Funding Source:

National Highway Traffic Safety Administration: NHTSA

Parent Organization:

Connecticut Department of Transportation

Annual Planning Documents:

Highway Safety Plan

Annual Report

Support Links:

CT Highway Safety Website: <http://www.ct.gov/dot/cwp/view.asp?a=2094&q=432886>

NHTSA: <http://www.nhtsa.gov>

CT Motorcycle Safety: <http://ride4ever.org>

Occupant Protection (OP) and Child Passenger Safety (CPS)

Objective:

The primary objective of the occupant protection program is to increase the observed Statewide seat belt use rate and to decrease unrestrained occupant injuries and fatalities.

Strategies:

Occupant Protection

- ◆ The CTDOT serves as the lead agency for the coordination of occupant protection programs in Connecticut. Participation in the national high visibility safety belt and child safety seat enforcement mobilization: "Click It or Ticket" will continue to be the core component of the program.

- ◆ This comprehensive campaign will include funding Statewide safety belt enforcement through checkpoints and roving/saturation patrols both day and night. The Highway Safety Office (HSO) will encourage participation in nighttime safety belt enforcement and track data from this initiative during the national mobilizations. An especially important component of this program is providing funding for observation surveys before and after enforcement waves measuring the effects of the campaign and determining the statewide safety belt use rate.
- ◆ Participation in the national “Click it or Ticket” mobilization and media campaign will be the major component of the occupant protection program. Paid media may include television, radio, internet, and outdoor advertising. Initiatives will be developed to promote awareness to the identified high risk groups (i.e., young males and pick-up truck operators). This will involve analysis of State crash data, motorist survey data, and safety belt use observation data. This activity will be supported by garnering corresponding earned media opportunities through the HSO, safety partners, law enforcement, and the NHTSA Region 1 media consultant.
- ◆ Other paid media and public information and education efforts will be conducted through a variety of public outreach venues. Safety belt messages and images including Click it or Ticket will be prominently placed at several of the States sports venues including, but not limited to: New Britain Stadium, Hartford XL Center, Bridgeport’s Harbor Yard, Rentschler Field, Dodd Stadium, Live Nation venues, Lime Rock Park, Stafford Motor Speedway, Thompson International Speedway, and the Waterford Speed Bowl. In support of the visual messages, public outreach will be conducted at these venues through tabling opportunities which will provide the opportunity to educate motorists about the importance of safety belt use for themselves and their passengers. Further public outreach will be executed through grants funding for the Rollover Simulator and Seatbelt “Convincer” demonstrators at various public and grassroots events.
- ◆ Safety belt messages will be broadcast to motorists through social media via <http://www.facebook.com/CThighwaysafety>. Announcements regarding highway safety promotional activities at public outreach/sporting venues and informational feeds on mobilizations will be regularly posted to educate followers.

Child Passenger Safety

- ◆ Efforts to educate the public about the importance and correct use of child restraint systems as children grow and “graduate” from rear-facing, forward facing, booster seats and adult seat belts, will promote greater compliance. The strategies will include educational programs, outreach events, and public information campaigns directed towards the general public (i.e., Child Passenger Safety Week); with an emphasis on groups identified as having low safety belt usage rates due to the demonstrated lack of child restraint shown in this situation.

- ◆ Promotion of proper child safety restraint use will also take place through technical support for child safety seat installation professionals through the child passenger safety conference, dissemination of support materials, and safety week planning. In order to better identify and target groups who are over represented in low restraint use, the program manager will coordinate with the HSO data contractor to implement changes in data collection.

Performance Goal:

To reduce the number of unrestrained occupants in fatal crashes from the three year (2008-2010) moving average of 77 in 2010 by 10 percent to a three year (2012-2014) moving average of 68 in 2014 and to increase the safety belt usage rate (observations) from 88 percent in 2011 to 90 percent or above in 2014.

Occupant Protection

Seatbelt Usage

	2006	2007	2008	2009	2010
% Belted Motor Vehicle Occupants (Observed)	83%	86%	88%	86%	88%
% Belted Motor Vehicle Occupants Fatalities	45%	47%	42.1%	38.7%	38.6%
Belt Use in Fatal Crashes					
Belted	93	97	77	58	78
Unbelted	72	84	77	69	85
Unknown	42	27	29	23	39
Total	207	208	183	150	202

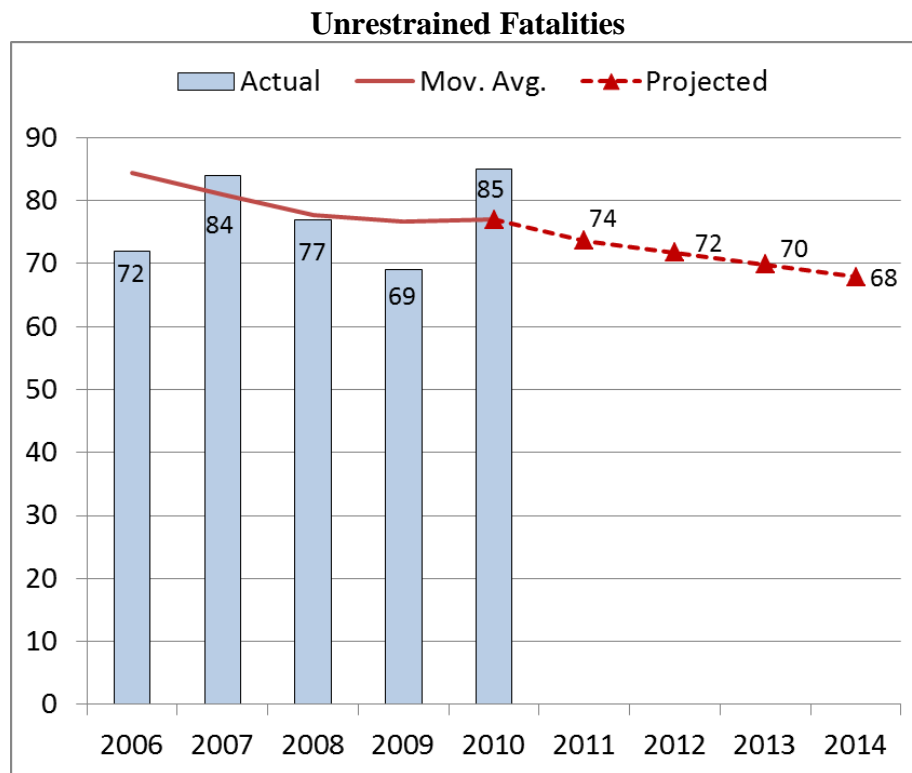
Source: FARS Final File 2006-2009, FARS Annual Report File 2010

Belt Use in passenger vehicle Fatalities	2008		2009		2010	
	N	Percent	N	Percent	N	Percent
Belt	77	42.1%	58	38.7%	78	38.6%
No Belt	77	42.1%	69	46.0%	85	42.1%
Unknown	29	15.8%	23	15.3%	39	19.3%
Total	183	100.0%	150	100.0%	202	100.0%

Source: FARS Final Files 2008-2009, Annual Report File 2010

Enforcement Activity	2006	2007	2008	2009	2010
Safety Belt Citations Issued	64,232	68,959	66,093	68,986	52,910
Safety Belt Adjudications Not Guilty	13%	13%	13%	13%	17%

Source: Connecticut DMV, Commercial Vehicle Safety Division; CT Judicial



Source: FARS Final Files 2006-2009, Annual Report File 2010

Child Passenger Safety

Child Restraint Use (Age 0 to 3 Years) 1997 and 2004-2010

	1997 (N=247)	2004 (N=134)	2005 (N=65)	2006 (N=170)	2007 (N= 184)	2008 (N=279)	2009 (N=259)	2010 (N=333)
Child Restraint Use	70.4%	93.3%	96.9%	89.9%	85.9%	85.0%	84.9%	85.2%
Driver Belt Use	63.6%	89.4%	89.2%	85.9%	85.3%	87.4%	89.1%	91.6%
When Driver Belted	80.3%	94.9%	98.3%	92.4%	89.5%	89.9%	88.8%	88.6%
When Driver Not Belted	56.3%	85.7%	85.7%	77.3%	61.9%	57.1%	38.5%	62.5%
Children in: Front Seat	23.9%	4.5%	1.5%	1.8%	2.7%	0.4%	9.9%	14.5%
Children in: Rear Seat	76.1%	95.5%	98.4%	98.0%	100.0%	99.6%	90.1%	85.5%

A key challenge in problem identification in child passenger safety is the availability of research and analysis of data to identify specific groups of motorists who do not comply with the law. Currently, there are deficiencies in obtaining the necessary information to identify children that are not properly restrained.

Performance Objective:

Occupant Protection

1. Increase the number of participating agencies in national safety belt mobilizations from the 119 that reported WAVE participation in FY 2012.
2. Decrease the percentage of safety belt citations adjudicated or not guilty from 17 percent to 13 percent or less by 2014.
3. Decrease the number of unbelted impaired drivers involved in fatal and injury crashes by encouraging law enforcement to ticket unbelted drivers during Driving Under the Influence (DUI) patrols and checkpoints. In FY 2011 there were 3,321 safety belt citations issued as a result of observed violations at DUI checkpoints and roving patrols – 2,894 local activity and 427 State Police.

Child Passenger Safety

1. Improve the availability, use, and proper installation of child restraint systems.
2. Increase public awareness of child safety seat/booster seat laws and awareness of reliable sources of information on proper child seat/booster use.
3. Implement changes to current data collection methods to provide more accurate data to identify children not properly restrained in motor vehicles.

Countermeasures:

Occupant Protection

Safety belt messages and images including Click it or Ticket will be prominently placed at several of the States sports venues including, but not limited to: New Britain Stadium, Hartford XL Center, Bridgeport's Harbor Yard, Rentschler Field, Dodd Stadium, Live Nation venues, Lime Rock Park, Stafford Motor Speedway, Thompson International Speedway and the Waterford Speed Bowl. In support of the visual messages, public outreach will be conducted at these venues through tabling opportunities which will provide the opportunity to educate motorists about the importance of safety belt use for themselves and their passengers. Further public outreach will be executed through grants funding for the Rollover Simulator and Seatbelt "Convincer" demonstrators at various public and grassroots events.

Child Passenger Safety

Efforts to educate the public about the importance and correct use of child restraint systems as children grow and "graduate" from rear-facing, forward facing, booster seats, and adult seat belts, will promote greater compliance. The countermeasures will include educational programs, outreach events, and public information campaigns directed towards the general public (i.e., Child Passenger Safety Week); with an emphasis on groups identified as having low safety belt usage rates due to the demonstrated lack of child restraint shown in this situation.

Promotion of proper child safety restraint use will also take place through technical support for child safety seat installation professionals – through the child passenger safety conference, dissemination of support materials, and safety week planning. In order to better identify and target groups who are over represented in low restraint use, the program manager will coordinate with the HSO data contractor to implement changes in data collection.

Speed Enforcement

Objective:

To reduce the number of Speeding-Related fatalities and serious injuries on Connecticut roadways.

Strategies:

Speeding related crashes, injuries, and fatalities will be addressed through funding High Visibility Enforcement (HVE) projects. Agencies will be encouraged to participate in speed-related enforcement through various methods including:

- ◆ Dedicated high visibility speed enforcement grants.
- ◆ Encouraging further enforcement during impaired driving saturation patrols meant to address the number of speed related crashes with alcohol involvement.
- ◆ Participation in Regional Traffic Units (RTU's).

To support this enforcement, each sub-grantee will be required to participate in a corresponding earned media program. In addition, funding for equipment related to speed-enforcement will be made available to law enforcement agencies.

Performance Goal:

To reduce the number of speed related fatalities from the three year (2008-2010) moving average of 109 in 2010 by 5 percent to a three year (2012-2014) moving average of 103.5 in 2014.

Performance Objectives:

Reduce the percentage of fatal crashes where speed was a contributing factor (FARS) below the 36.9 percent recorded in 2010.

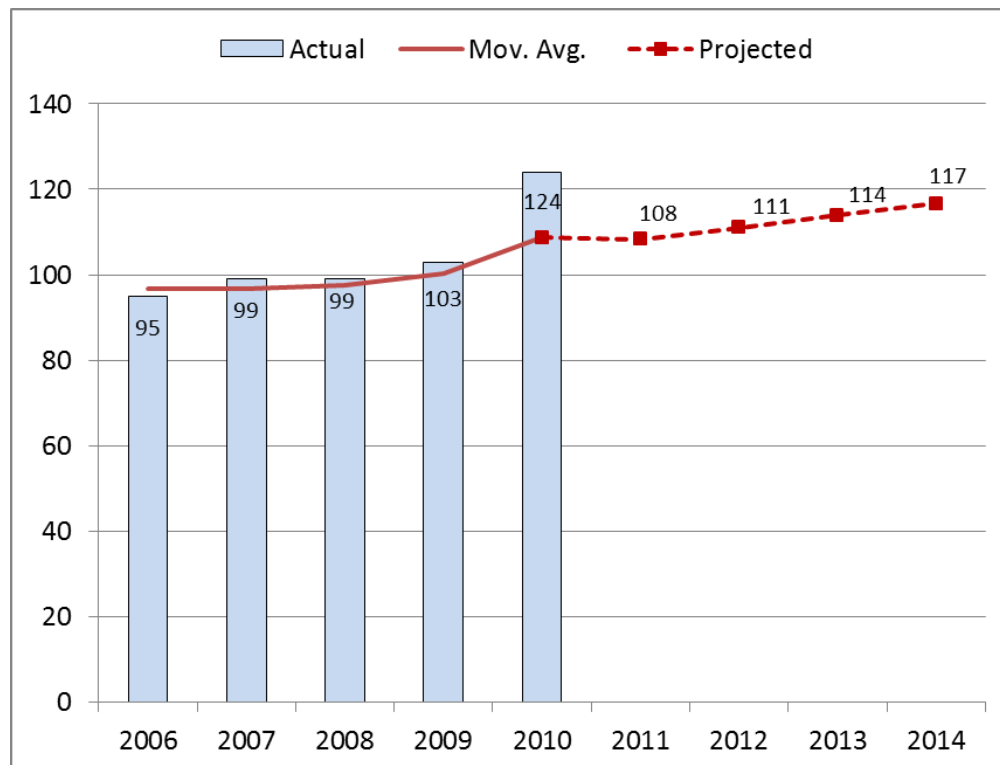
Expand traffic enforcement through Regional Traffic Unit's (RTUs) by increasing the number of participating agencies from the 14 recorded in 2010.

Reduce the number of work zone related crashes resulting in injuries and fatalities through training programs for law enforcement.

Performance Measures	2006	2007	2008	2009	2010
% CT Speed-Related Fatal Crashes	29.7%	31.6%	31.2%	45.5%	36.9%
% U.S. Speed-Related Fatal Crashes	31.3%	31.4%	30.6%	30.9%	31.0%
% CT Speed-Related Injury Crashes	11.9%	17.5%	10.2%	19.2%	8.0%
Speeding Related Fatalities	96	95	99	104	124

Sources: FARS with speed defined as: Driving too fast for conditions or in excess of posted speed limits; CT Department of Transportation

Speeding-Related Fatalities



Source: FARS

Countermeasures:

Expand traffic enforcement through Regional Traffic Unit's (RTUs) by increasing the number of participating agencies from the 14 recorded in 2010.

Reduce the number of work zone related crashes resulting in injuries and fatalities through training programs for law enforcement.

Distracted Driving

Objective:

To reduce the incidence of crashes resulting in injuries and fatalities related to distracted driving. More specifically; to reduce the incidence of crashes related to the use of handheld mobile phones on Connecticut roadways.

Strategy:

- ◆ Education
- ◆ Enforcement

Performance Goal:

Because of the way crash data is collected in Connecticut, there is a lack of reliable performance measure data to aid in problem identification as it relates to the role mobile phone use has in traffic crashes. National data pertaining to distracted driving notes over 3,500 traffic deaths, representing nearly 10% of all traffic related fatalities, related to mobile phone use in the year 2010, highlighting the need for countermeasures to address this issue.

Performance Objectives:

1. Reduce crashes resulting in fatalities and injuries as a result of mobile phone use.
2. Increase public awareness of the dangers of distracted driving, mobile phone use and texting while driving.
3. Change motorists attitudes toward mobile phone use and texting while driving.
4. Increase High Visibility Enforcement activity and educate law enforcement on the identification and citation of offending violators of Connecticut's mobile phone laws.

Countermeasures:

Connecticut had proven to be a leader in the enforcement of distracted driving laws, observed through a 57% decrease in mobile phone activity during the Distracted Driving Enforcement Project. Specifically, this demonstration project was built to test whether High Visibility Enforcement could have an effect on driver behavior as it relates to mobile phone use.

There is a continuing need to educate the motoring public as to the dangers of distracted driving and enforce Connecticut's stringent mobile phone laws in an effort to mitigate this dangerous and evolving behavior. While Connecticut is the recipient of a second, texting-focused demonstration project, the research nature of that program lacks the flexibility and statewide approach needed to effectively address distracted driving and mobile phone use.

The Highway Safety Office plans to continue to build on best practices developed through the two High Visibility Enforcement research projects to address mobile phone use by motorists. Planned countermeasures include “focused enforcement waves” where law enforcement specifically targets drivers in violation of Connecticut’s mobile phone statutes. This enforcement will be accompanied by both paid and earned media to educate motorists about the risk of receiving a citation for engaging in this dangerous behavior. Enforcement of mobile-phone laws in work-zone areas will also be a priority area.

While Connecticut has used the NHTSA developed “Phone in One Hand. Ticket in the Other” slogan during the pilot programs, research will be done to develop further distracted driving messaging and educational materials. The goal of the development of these educational and outreach materials is to distribute them to Connecticut motorists – especially young drivers.

There will also be special outreach and education programs for younger drivers including bringing the successful “Save a Life” tour to State High Schools in Connecticut, to educate young drivers.

Commercial Vehicle Safety

Background:

Commercial vehicles are defined as vehicles having a gross vehicle weight rating (GVWR) over 10,000 lbs. Because of the size of the vehicles involved, commercial vehicle crashes, typically equate to larger traffic delays, property damage and deaths. According to a Pacific Institute for Research and Evaluation report on Unit Costs of Medium and Heavy Truck Crashes (2006), the average cost per crash involving a large truck was \$91,112. That average increased to \$195,258 when there was injury involved and increased to \$6 million when a fatality was involved. Nationally, using these 2006 cost estimates, with roughly 124,000 large trucks and buses involved reportable crashes in 2009. The total monetary expense for 2009 is estimated at 11.3 billion dollars.

In 2009, Connecticut reported a total of 745 large truck and bus crashes, of which 19 were fatal crashes, 728 were non-fatal and 184 were injury crashes. Heavy truck/bus crashes differ from other vehicle crashes in a number of ways, many reflecting the size and use of these vehicles. When compared to the overall crash picture, heavy truck/bus crashes involve:

- More than two-thirds of the crashes involve combination vehicles.
- Of the fatal crashes, by in large, the vast majority of the passenger vehicle drivers were cited for moving violations related to the crash as compared to the commercial vehicle driver.
- Nearly two-thirds of the crashes occur between the hours of 6:00 a.m. and 5:59 p.m., but fewer crashes between 6:00 p.m. and 5:59 a.m.
- Nearly 90% of the crashes occur on a weekday.

In 2009, nearly three-quarters of all large truck crashes (723), including fatal crashes (18), occurred in three of our eight counties; Fairfield, Hartford, and New Haven.

Objective:

To reduce the number and severity of crashes involving commercial motor vehicles and hazardous materials incidents.

Strategies:

- ◆ Step up targeted enforcement initiatives.
- ◆ Continued coordination between the Department of Motor Vehicles and State Police to heighten enforcement activities prior to or within high crash corridors.
- ◆ Promote the increase of space/parking capacity for commercial vehicles in the State's rest areas.

Performance Goal & Objective:

With Connecticut's 2010 fatality rate of 0.09 per 100M VMT, which continues to be less than the national average of 0.13, and well below the 2013 national goal of 0.114 for the calendar year, Connecticut will strive to maintain its lower than national average percentage and reduce its total number of crashes annually by three percent.

Countermeasures:

Continued participation with the national and state specific program elements:

Driver/Vehicle Inspections

Compliance Reviews

Traffic Enforcement

Public Education and Awareness

Data Collection and Reporting

Continued implementation of other strategies identified in Connecticut's annual Commercial Vehicle Safety Plan that is part of the Motor Carrier Safety Assistance Program (MCSAP).

Coordinate with the CTDOT regarding feasibility of using information boards and rest areas to post information on these high crash corridors.

Traffic Incident Management

Background:

Traffic Incident Management (TIM) consists of a planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents and improves the safety of motorists, crash victims and emergency responders.

TIM is a dynamic process that involves people, policy, education and training. The effects of an efficient TIM system will improve safety for all first responders and the motoring public in many ways. For example, the Connecticut Highway Assistance Motorist Patrol (CHAMP) program assists disabled vehicles while protecting motorists from nearby traffic and reducing the risk of secondary crashes.

Objective:

Continually improve traffic incident response and recovery time by all responding agencies, and support this goal with policies, programs, projects, and funding.

Strategies:

- ◆ Obtain and maintain high-level buy-in for a statewide TIM Program.
- ◆ Adopt the Incident Command System (ICS) in conjunction with the National Incident Management System (NIMS) as the standard operating procedure for emergency response.
- ◆ Support multi-disciplinary TIM training efforts.
- ◆ Provide Unified Response Manual (URM) training to all State and local first and secondary responders.
- ◆ Conduct after-incident review procedures, and public awareness programs to support effective on-scene incident management.
- ◆ Continue to raise awareness to the State of Connecticut Incident Management Policy and the Connecticut Quick Clearance Policies.
- ◆ Continue to operate and support the statewide CHAMP program to its full capacity.
- ◆ Promote public awareness of the Connecticut “Move It” and “Move Over” laws.
- ◆ Investigate opportunities to enhance or improve the quick clearance of highway incidents

- ◆ Facilitate the development and tracking of traffic incident management performance metrics
- ◆ Implement additional recommendations to enhance and support incident management as they become identified.
- ◆ Utilize the “Big Orange” work zone safety program to enforce traffic laws and reduce vehicle speeds in work zones.
- ◆ Reduce the number of secondary crashes on the limited access highway system.

Performance Goal:

The TIM program is intended to improve safety for emergency responders and motorists. Emphasis areas of the TIM program include quick incident response and clearance, reduction of non-recurring congestion due to incidents, reduction of secondary crashes and improved traveler information dissemination to the public. In 2012, the CTDOT responded to over 3,500 traffic incidents on the limited access highway system.

CTDOT currently collects data for the following TIM performance measures:

- Average incident duration time for three types of incidents (a) motor vehicle, (b) jack-knifed tractor trailer trucks and (c) overturned tractor trailer trucks. The current goal is 45 minutes or less for motor vehicle crashes, less than three (3) hours for jack-knifed tractor trailers, and less than five (5) hours for overturned tractor trailers.
- Average incident response time (response by State Police from notification to arrival on scene). This measure is currently analyzed on the I-95 corridor, and the goal is to have State Police personnel on-scene within 3 minutes of notification.
- Number of CHAMP vehicle assists. In 2012, the CHAMP program provided assistance to 20,000 motorists statewide.

Performance Objective:

By implementing effective TIM policies, procedures and practices, a number of safety benefits will be realized.

Countermeasures:

Establish a statewide, executive level TIM Policy Committee.

Establish a robust statewide TIM program, with multi-agency support. Formalize commitment through an update and resigning of the Connecticut Highway Incident Management Policy.

Provide NIMS training to CTDOT staff and other emergency responders.

Initiate development of an implementation plan for the Strategic Highway Research Program 2 (SHRP2) National TIM Responder Training.

Identify additional training resources and needs for Connecticut's emergency responders.

Develop and provide URM training program for all emergency first and secondary responders.

Continue to conduct existing performance measures and identify additional measures that may be useful for assessing the effectiveness of an incident management program.

Obtain approval to fill vacant staffing positions in the Connecticut Highway Assistance Motorist Patrol (CHAMP) program.

Continue to conduct after-incident review procedures, and public awareness programs to support effective on-scene incident management.

Raise public awareness to Connecticut "Move It" and "Move Over" laws through public service announcements (PSAs), driver education and other methods.

Promote emergency responder awareness of the availability of limited access highway diversion plans.

Increase the use of the "Big Orange" program within work zones and pursue opportunities to expand and enhance the program.

Develop metrics to document the effectiveness of the "Big Orange" program to reduce speeds in work zones.

Identify and procure potential technologies that can be used by emergency responders to enhance or improve quick clearance.

Identify opportunities to collect and document the number of secondary crashes on limited access highways.

Support pilot program efforts for all of these documented countermeasures.

APPENDIX A - History of the Connecticut Strategic Highway Safety Plan

February 2004	A kick off meeting was held with staff from FHWA, Engineering, Policy and Planning, and Highway Safety. Co-chairs of the steering committee were appointed.
March 2004	Conference call with FHWA and their consultant to discuss the Integrated Safety Management Process.
October 2004	Two staff members from the Department attended the Comprehensive Highway Safety Peer Exchange Conference in Kansas.
October 2004	A meeting with the stakeholders was held to discuss the procedures for the development of a draft plan.
November 2004	A meeting with the stakeholders was held to discuss the emphasis areas and members were assigned specific emphasis areas to research and report on.
November 2004	Stakeholders developed reports for each emphasis area and these reports were consolidated into a draft plan. The plan was sent to stakeholders for their review.
December 2004	A meeting with the stakeholders was held to discuss and modify the draft plan.
March 2005	A 2 ½ day summit on the Connecticut Comprehensive Safety Plan was held. Accomplishments of this summit were to discuss why these emphasis areas were chosen, develop strategies for each area, and develop a final draft of Connecticut's Strategic Highway Safety Plan.
May 2005	A meeting with the stakeholders was held to discuss the next step to develop and distribute a final plan.
August 2005	Passage of SAFETEA-LU
November 2005	Strategic Highway Safety Plan Peer Exchange Phoenix, Arizona
June 2006	Update existing Data and add additional Stakeholders
August 2006	Sent out draft plan for review
November 2006	SHSP process approved by FHWA
June 2010	2006 SHSP updated
June 2011	Strategic Highway Safety Plan Peer Exchange Austin, Texas
July 2012	Passage of MAP-21
November 2012	Requests for proposal were solicited to retain the services of a consultant engineer in preparing a new Strategic Highway Plan to meet the requirements of MAP-21.
January 2013	Meeting of the SHSP steering committee to update the SHSP as a bridge document to a new MAP-21 SHSP.
March 2013	Hired a consultant to prepare a new SHSP for Connecticut.

APPENDIX B - Stakeholders and Members of Committees

Federal, Tribal, State, local and private sector safety stakeholders with commitment to Highway Safety

E SC W	Safety Program Leadership Executive Team Member of the SHSP Steering Committee Member of Working Group				
Governor’s Highway Safety Representative					
		Thomas Maziarz	(860) 594-2001	Thomas.Maziarz@ct.gov	E
Federal Highway Administration (FHWA)					
	CT Division Administrator	Amy Jackson-Grove	(860) 659-6703	Amy.Jackson-Grove@dot.gov	E
	Traffic and Safety Engineer	Robert Ramirez	(860) 494-7562	Robert.Ramirez@dot.gov	SC
	Safety/Area Engineer	Robert W. Turner	(860) 494-7563	Robert.W.Turner@dot.gov	SC
National Highway Transportation Safety Association (NHTSA)					
	Region 1 Administrator	Michael Geraci	(617) 494-3427	Michael.Geraci@dot.gov	E
	Regional Program Manager	Angie Byrne	(617) 494-2682	Angie.Byrne@dot.gov	SC
Federal Motor Carrier Safety Administration (FMCSA)					
	CT Division Administrator	Christopher Henry	(860) 659-6700	christopher.henry@dot.gov	E
	State Program Specialist	Karl Boehm	(860) 659-6700	karl.boehm@dot.gov	
Federal Railroad Administration (FRA)					
	Region 1 Administrator	Les Fiorenzo	(617) 494-3484	les.fiorenzo@dot.gov	
Federal Transit Administration (FTA)					
	Region 1 Administrator	Mary Beth Mello	(617) 494-1784	Mary.Mello@dot.gov	
Tribal Nations					
	Mashantucket (Western) Pequot Tribal Nation Director of Planning & Community Development	Keith T. Gove	(860) 312-2510	kgove@mptn-nsn.gov	
	The Mohegan Tribe Chief of Staff, External & Governmental Affairs	Charles F. Bunnell	(860) 862-6120	cbunnell@moheganmail.com	
	The Mohegan Tribe Director of Public Safety	Joseph Lavin	(860) 862-6120	jlavin@moheganmail.com	
Office of the Chief State’s Attorney					
	Traffic Safety Resource Prosecutor	Jason Germain	(860) 258-5926	Jason.Germain@ct.gov	
Connecticut Department of Motor Vehicles					
	Commissioner	Melody Currey	(860) 263-5015	Melody.Currey@ct.gov	E
	Commercial Vehicles Champion	Donald Bridge	(860) 263-5446	Donald.Bridge@ct.gov	SC, W
Connecticut Department of Emergency Services and Public Protection					
	Commissioner	Reuben Bradford	(860) 685-8000	Reuben.Bradford@ct.gov	E
	State Police Commander	Danny R. Stebbins	(860) 685-8000	Danny.Stebbins@ct.gov	SC
	DOT Liason	Scott A. Smith	(860) 875-8911	Ssmith@tolland.org	SC

Connecticut Department of Public Health					
	Commissioner	Dr. Jewel Mullen	(860) 509-7101	Jewel.Mullen@ct.gov	
	Deputy Commissioner	Dr. Katharine Lewis	(860) 509-7101	Katharine.Lewis@ct.gov	
	EMS	Jean Speck	(860) 509-7975	Jean.Speck@ct.gov	
University of Connecticut					
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	CT Fire Chief's Association President	Chief John Mancini UConn Fire Dept.	(860) 486-5619	John.Mancini@uconn.edu	
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	Connecticut Bicycle and Pedestrian Advisory Board (CBPAB)	Neil Pade	(860) 693-7891	npade@TownofCantonCT.org	
	Highway Safety Corp., Inc.	Roy Riedl	(860) 633-9445	Riedl@highwaysafety.net	
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	Motor Transportation Association of CT	Michael J. Riley	(860) 520-4455	Marie@mtac.us	
	Regional Plan Association	Amanda Kennedy	(203) 356-0390	amanda@rpa.org	
	The Connecticut School Transportation Association (COSTA)	Donna Legault	(860) 953-2782	info@ctschoolbus.org donna@ctschoolbus.org	
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APPENDIX C - Acronyms

AASHTO	American Association of State Highway and Transportation Officials
B/C	Benefit / Cost ratio
CAS	Collision Analysis System
CAST	Connecticut's Accident Summary Tables
CDIP	Crash Data Improvement
CDL	Commercial Driver's License
CDR	Crash data repository (housed at UCONN)
CHAMP	Connecticut Highway Assistance Motorist Patrol
CIB	Central Infractions Bureau
CIDRIS	Connecticut Impaired Driving Records Information System
CIVLS	Connecticut Integrated Vehicle and Licensing System
CJIS	Criminal Justice Information System
CODES	Crash Outcome Data Evaluation System
CPS	Child Passenger Safety
CRCOG	Capital Region Council of Governments
CTDMV	Connecticut Department of Motor Vehicles
CTDOT	Connecticut Department of Transportation
CTSRC	Connecticut Transportation Safety Research Center (housed at UCONN)
CVARS	Commercial Vehicle Analysis Reporting System
CVSP	Commercial Vehicle Safety Plan
DESPP	Department of Emergency Services and Public Protection (State Police)
EMS	Emergency medical services
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
GIS/GPS	Geographic Information Systems/Global Positioning System
GVWR	Gross Vehicle Weight Rating
HI	Hazard Index
HRRRP	High-Risk Rural Roads Program
HSIP	Highway Safety Improvement Program
HSO	Highway Safety Office

HSP	Highway Safety Plan
HVE	High Visibility Enforcement
ICS	Incident Command System
ISS	Injury Surveillance System
ISTEA	Intermodal Surface Transportation Efficiency Act
LRARP	Local Road Accident Reduction Program
MAP-21	Moving Ahead for Progress in the 21st Century
MASH	Manual for Assessing Safety Hardware
MCSAP	Motor Carrier Safety Assistance Program
MIRE	Minimum Inventory of Roadway Data Elements
MMUCC	Model Minimum Uniform Crash Criteria
MUTCD	Manual on Uniform Traffic Control Devices
NCHRP	National Cooperative Highway Research Program
NEMSIS	National EMS Information System
NHTSA	National Highway Traffic Safety Administration
NIMS	National Incident Management System
OP	Occupant Protection
OSHA	Occupational Safety and Health Administration
PSA	Public Service Announcement
Re-ROD	Regulation of Driver Systems Re-Engineering
RHGXP	Railway Highway Grade Crossing Program
RPO	Regional Planning Organizations
RTOL	Real-Time On-Line Vehicle Registration
RTU	Regional Traffic Units
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)
SHRP2	Strategic Highway Research Program 2
SHSP	Strategic Highway Safety Plan
SLOSSS	Suggested List of Surveillance Study Sites
TIM	Traffic Incident Management
TMP	Transportation Management Plan
TraCS	Traffic and Criminal Software
TRCC	Traffic Records Coordinating Committee

TTC	Temporary Traffic Control
URM	Unified Response Manual
UConn - LTAP	University of Connecticut - Local Technical Assistance Program
WZIP	Work Zone Improvement Plan
WZPR	Work Zone Process Review
WZ SA	Work Zone Mobility and Safety Self-Assessment
XML	Extensible Markup Language